UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,638	07/15/2002	Martin Matthew Matzuk	MTN-029US	5196

959 7590 02/10/2006

LAHIVE & COCKFIELD, LLP.
28 STATE STREET
BOSTON, MA 02109

EXAMINER
QIAN, CELINE X

ART UNIT	PAPER NUMBER
1636	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/018,638	MATZUK ET AL.	
	Examiner	Art Unit	
	Celine X. Qian Ph.D.	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7,8,10-13 and 25-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26 and 27* is/are allowed.

6)☒ Claim(s) *1-4,7,8,10-13 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-4, 7, 8, 10-13, 25-27 are currently pending.

This Office Action is in response to the Amendment filed on 1/4/06.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/4/06 has been entered.

Response to Amendment

The rejection of claims 1-4, 7, 8, 10-13 and 25 under 35 U.S.C. 112 1st paragraph is maintained for reasons set forth of the record mailed on 10/4/05 and further discussed below.

Response to Arguments

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4, 7, 8, 10-13 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In response to this rejection, Applicants argue that the specification provides methods for identifying the claimed GDF-9 regulatory elements, including those with a nucleotide sequence at least 95% identical to murine GDF-9, assays to test whether these variants are capable of regulating expression of an operably linked gene in oocytes or testis. Applicants assert such disclosure provides a detailed description of how to identify and characterize the claimed GDF-9 molecule from variety of sources, and provides working examples which demonstrate how the claimed molecules can be tested for regulating expression of genes as claimed. Applicants further assert that the specification identifies a testis-specific repressor in the region from 3.3 to 10 kb immediately 5' of the transcription initiation site of the mouse GDF-9 gene, thus further testing can be done to map such regulating elements. Moreover, Applicants assert that the specification exemplify a polynucleotide which is 300 nucleotide in length and which contains a conserved domain that has been shown to bind basic helix loop helix transcription factors. Applicants thus conclude that the written description requirement is met.

The above arguments has been fully considered but deemed unpersuasive.

As discussed in the previous office action, the specification must describe the claimed invention by a representative number of species by their complete structure, or other identifying characteristic. In the instant case, the claimed genus encompasses nucleic acid molecules comprising a portion of nonhuman GDF-9 gene capable of regulating expression of a gene in oocytes and testis, wherein the nucleic acid molecule has 95% sequence identity with the 3.3kb/1kb murine GDF-9 immediate 5' sequence, or a portion of at least 300 nucleotides. This claimed genus of polynucleotides encompasses potentially a large number of DNA fragments of various sizes and from different animal species, wherein said DNA fragments can be either 5'

(within 10kb or 3.3kb) or 3' (within 1 kb) of the GDF-9 gene. The specification only discloses a 10 kb fragment immediately 5' from the transcription start site of the mouse GDF-9 gene that directs transcription of GFP in mouse ovary, and a 3.3 kb fragment immediately 5' from the transcription start site of the mouse GDF-9 gene that directs transcription of GFP in mouse ovary and testis. The specification does not describe a regulatory element of any size in any other non-human animal that can direct testis or ovary specific gene transcription. The specification also fails describe any fragments larger than 300 bp isolated from either 5' or 3' of the mouse GDF-9 gene that can direct ovary or testis specific transcription. In analyzing whether the written description requirement is met, it is first determined whether a representative number of species have been described by their complete structure. Next, it is determined whether a representative number of species have been sufficiently described by other relevant identifying characteristics. The instant specification only discloses one nucleic acid sequence capable of promoting expression in ovary and testis, the mouse 3.3 kb fragment immediately 5' to the GDF-9 gene, one fragment that directs expression in ovary, but not testis, the mouse 10 kb fragment immediately 5' to the GDF-9 gene. In view of the large genus that is claimed, this hardly represents a representative number of species. Further, the specification fails to teach what is the critical/essential element that the claimed polynucleotide must have for its function of regulating expression in oocyte or testis. Applicants are reminded that the written description requirement requires that the specification to describe a representative number of species of the claimed invention by their complete structure or other identifying characteristics. The disclosure of methods for identifying the claimed invention is not itself a description of the structure of the claimed invention. The disclosure of the method of testing whether the claimed invention has

regulatory function in oocyte or testis does not constitute the description of the structure of the claimed invention either. The MPEP states "a definition by function alone "does not suffice" to sufficiently describe a coding sequence "because it is only an indication of what the gene does, rather than what it is." Eli Lilly, 119 F.3 at 1568, 43 USPQ2d at 1406. See also Fiers, 984 F.2d at 1169-71, 25 USPQ2d at 1605-06 (discussing Amgen Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991))." Since the specification does not describe what are necessary elements within the 3.2 and 10 kb fragment for the claimed regulating function in oocytes or testis, the correlation between the minimal structure and the function has not been established. The prior art does not teach such correlation either. Without such correlation, one skilled in the art would not be able to envision the structure of the claimed nucleic acid molecule based on the recited function. The teaching provided by Liang et al. that 300 nucleotides contains a conserved domain that has been shown to bind helix loop helix transcription factors at most establishes that there is a putative binding site within the region, however, it does not provide any factual evidence that this site within the GDF-9 gene region actually binds a transcription factor that directs tissue specific expression in oocytes and testis. The claims read on any 300 bp portion of the 3.3 or 1kb fragments 5' to GDF-9. As discussed above, without the correlation of the function of the claimed sequence and the minimal structural (the sequence, in the instant case), one of skilled in the art would not know how to envision the structure of the claimed genus of polynucleotides. In the example given in the interim guideline, the specification teaches a protein having enzymatic activity, and the procedures for making the variants of the protein is well known in the art, and assays for testing the enzymatic reaction are also well known, thus one skilled in the art can make the variants that retains the function.

However, in the instant case, the specification does not describe what is the structural requirements for the claimed nucleic acid that is necessary for the recited function, or what is known in the art on how to make variants of the mouse GDF-9 promoter that retains the claimed function. Thus, unlike the example given in the guideline, the instant specification fails to provide adequate description for the claimed genus of polynucleotides. Therefore, this rejection is maintained.

Claims 26 and 27 are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Celine X. Qian Ph.D. whose telephone number is 571-272-0777. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel Ph.D. can be reached on 571-272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Celine X Qian Ph.D.
Examiner
Art Unit 1636

CELIAN QIAN
PATENT EXAMINER